

ABSTRACT OF THE DISCLOSURE

External-cavity optically-pumped semiconductor lasers (OPS-lasers) including an OPS-structure having a mirror-structure surmounted by a surface-emitting, semiconductor multilayer (periodic) gain-structure are disclosed. The gain-structure is pumped by light from diode-lasers. The OPS-lasers can provide fundamental laser output-power of about two Watts (2.0 W) or greater. Intracavity frequency-converted arrangements of the OPS-lasers can provide harmonic laser output-power of about one-hundred milliwatts (100 mW) or greater, even at wavelengths in the ultraviolet region of the electromagnetic spectrum. These high output powers can be provided even in single axial-mode operation. Particular features of the OPS-lasers include a heat sink-assembly for cooling the OPS-structure, a folded resonator concept for providing optimum beam size at optically-nonlinear crystals used for frequency conversion, preferred selection of optically-nonlinear materials for frequency-conversion, and compound resonator designs for amplifying second harmonic-radiation for subsequent conversion to third or fourth harmonic radiation.